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Correspondence to Nature Climate Change

Sivan Kartha*, Stockholm Environment Institute, United States (sivan.kartha@sei.org)

Tom Athanasiou, Climate Equity Reference Project, United States

Simon Caney, University of Warwick, United Kingdom

Elizabeth Cripps, University of Edinburgh, United Kingdom

Kate Dooley, University of Melbourne, Australia

Navroz K. Dubash, Centre for Policy Research, India

Teng Fei, Tsinghua University, Beijing, China

Paul G. Harris, Education University of Hong Kong, Hong Kong

Christian Holz, Carleton University, Canada

Bård Lahn, CICERO Center for International Climate Research, Norway

Darrel Moellendorf, Goethe Universität Frankfurt am Main, Germany

Benito Müller, Environmental Change Institute, University of Oxford, United Kingdom

J. Timmons Roberts, Brown University, United States

Ambuj Sagar, Indian Institute of Technology, Delhi, India

Henry Shue, Centre for International Studies, University of Oxford, United Kingdom

Peter Singer, Princeton University, United States

Harald Winkler, University of Cape Town, South Africa

The recent article by Robiou du Pont et al[1] (hereafter, RbD) suggests that wealthier countries (e.g., EU) have made more “equitable” contributions to the Paris goals than poorer countries (India, China), with most other developing countries somewhere in between. This finding has been trustingly repeated since, even by those recognizing it as “counter-intuitive”[2].

In fact, developed countries have the majority of responsibility for the atmospheric build-up of greenhouse gases[3], and the majority of the financial wherewithal to help solve the climate problem[4], yet their Paris pledges amount to fewer tons of mitigation than developing countries[5].

RbD’s objective to examine multiple equity approaches is laudable, however, the methodology reflects a selection of approaches biased in favour of wealthier, higher-emitting countries in three ways.

First, the approaches[1] selected to represent the IPCC equity categories are skewed by the prominence of “grandfathering” as an allocation principle. Grandfathering, (in RbD, “Constant Emission Ratio”), privileges today’s high-emitting countries when allocating future emission entitlements. Despite acknowledging that grandfathering is criticized on equity grounds, it is chosen to represent one of RdP’s five categories, because “it is implicitly followed by many of the developed countries”[1]. This rationale is no basis for including a political position in a survey of equity approaches, and by construction it generates outcomes that favour developed countries. Its biased consequences can be anticipated: for example, grandfathering gives the EU and US four and nine times more per capita allocation, respectively, than India, despite India still combating widespread energy poverty, with hundreds of millions of residents without basic energy services[6].

Multiplying the problem, grandfathering is introduced into two other approaches (“Equal Per Capita” and “Capability”). While these approaches draw upon ethically defensible bases (equality and ability to pay, respectively), the methodology[1] dilutes them by means of a gradual “transition period” from pure grandfathering to the specified equity approach. (This concession cannot be rationalized on the basis of avoiding technically implausible reduction rates, nor economic efficiency, since RdP analyse transferable emissions allocations rather than physical emissions.) With global emissions declining rapidly toward zero, this slow shift means that nearly half of the remaining carbon budget is grandfathered, rather than being allocated according to each approach’s nominal equity principle. Making grandfathering a central part of three out of the five equity approaches used embeds a bias against poorer and lower-emitting countries.

Second, RbD present only five of the six categories used by the IPCC, excluding one category based exclusively on the Responsibility Principle – that the largest contributors to global GHG concentrations ought to do most to reduce global emissions. This exclusion discounts a key principle of the Rio Convention and UNFCCC, and compounds the bias against poorer, lower-emitting countries.

Third, the “IPCC equity categories”[1] referenced cannot be considered an authoritative and ethically-robust taxonomy of equity approaches in any sense. The IPCC borrowed this categorization from one study[7] merely to present data from an incomplete and non-representative sampling of approaches. The original study cautioned that “the current literature only covers a small proportion of the possible allocation approaches” and observed that “many different categorizations...can be found in the literature”[7]. Indeed, the IPCC recognized the ethical importance of several other equity notions relevant for emissions allocations.

These include: the relative moral relevance of consumption-based versus production-based emissions, survival versus luxury emissions, progressive versus regressive allocation of mitigation costs, prioritarianism versus egalitarianism, and – not least – the right to development and the critical ethical importance of the eradication of poverty. Incidentally, but importantly, each of these issues engender ethical arguments that imply greater allocations for poorer and lower-emitting countries compared to the subset of approaches used by RdP. Neglecting them compounds the bias in the results. Ultimately, the article's conclusions are not so much derived as predetermined by the authors' biased normative choices.

These methodological and logical shortcomings of RdP reveal a more profound problem. When reflecting on the relative fairness of countries' pledges and actions, the role of scholarly analysis and quantification is to help clarify the ethical underpinnings and consequences of the choices facing society. It is emphatically not to make those normative choices. The RbD paper has in contrast made a number of normatively crucial choices, and moreover has not done so explicitly but in a way that obfuscates the ethical underpinnings and their consequences. More troublingly, it is presented as a neutral, ecumenical, comprehensive survey, purportedly following an objective IPCC taxonomy. The overall effect, far from illuminating the moral choices confronting society, is to present falsely objective and precise analysis that at best conceals the moral choices and at worst arrogates them.

However, we are in utter agreement with RbD that "equity is still central for the ratcheting process and when discussing the adequate magnitude of climate finance and support"[1]. Climate change is a global commons problem, and broad global cooperation is needed to address it. As the IPCC noted, an agreement that is "seen as equitable can lead to more effective cooperation"[8]. The chances of keeping warming to tolerable levels vastly improves by pushing forward a robust and productive conversation about fairness and equity[9].

1. Robiou du Pont, Y. *et al. Nat. Clim. Change* **7,** 38–43 (2017).

2. Zenghelis, D. *Nat. Clim. Change* **7,** 9–10 (2017).

3. Stocker, T. F. *et al.* (eds) *Climate Change 2013: The Physical Science Basis.* (IPCC, Cambridge University Press, 2013).

4. World Bank, *World Development Indicators*. (2017).

5. Holz, C., Athanasiou, T., & Kartha, S. *Harvard Dataverse.* doi:10.7910/DVN/RIBJXF (2017).

6. Sadath, A. & Acharya, R. *Energy Policy* **102**, 540–550 (2017).

7. Höhne N., den Elzen, M. G. J. & Escalante, D. *Clim. Policy* **14**, 122–147 (2014).

8. Edenhofer, O. *et al.* (eds). *Climate Change 2014: Mitigation of Climate Change. (IPCC,* Cambridge University Press, 2014).

9. Klinsky, S. *et al. Glob. Environ. Change* **44**, 170–173 (2017).